

Energy Peak

**System Check Slide**

An aerial photograph of a dense urban skyline, likely Melbourne, Australia, featuring numerous skyscrapers and high-rise buildings. The text is overlaid on the top half of the image.

# **Global Energy Peak Threat or Opportunity ?**

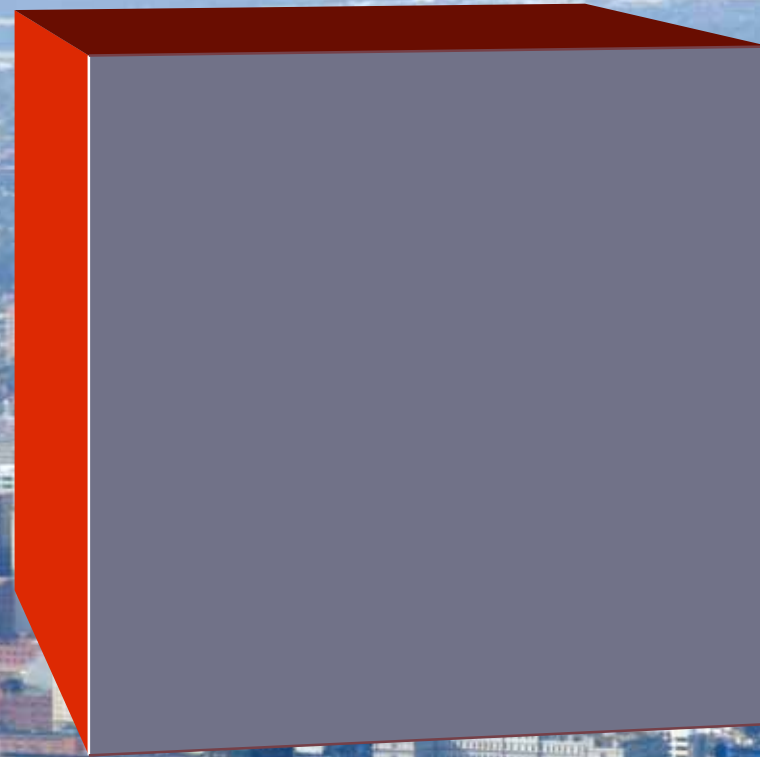
***David Holmgren***

***APC8***

***Melbourne April 2005***



Australia's annual oil consumption: 45,000 Megalitres as a 360m cube



Rialto Tower 251m

**Scale of our oil dependence**

# Globalised energy consumption



Rising air travel: essential service or luxury?



# Bass Strait Oil: our inheritance almost spent



Altona Oil Refinery, Victoria



# Coal: base demand & global warming



Loy Yang mine & power station, Latrobe Valley Victoria

# Making the hinterland pay

Industrial plantation forestry, Otways



Clearfell of *Pinus radiata*



# Farming: supercharging nature

Dairy Farming,  
Gippsland

Silage pit

300 cow dairy



# Settlement patterns of consumption

Melbourne outer urban development  
Segregated land uses

Space and fuel intensive  
transport infrastructure

1/4 acre blocks,  
little food production  
or economic activity

Unproductive irrigated  
open space

# Expanding the problem

Rural Residential development Melton Victoria

Motor car dependence

2 hectare blocks, no significant food production or economic activity



# Environmental & Social Crisis

## Environmental

- Climate change (already happening)
- Land degradation (continuing)
- Resource depletion (global oil peak)

## Social

- Family & community breakdown
- Addictive behaviours

## Economic & Political

- National & household debt (unprecedented)
- Robber baron capitalism, criminal economies
- Illusion and deception, neo-fascist solutions

# Why doesn't crisis seem to hit home?

## A rising energy base

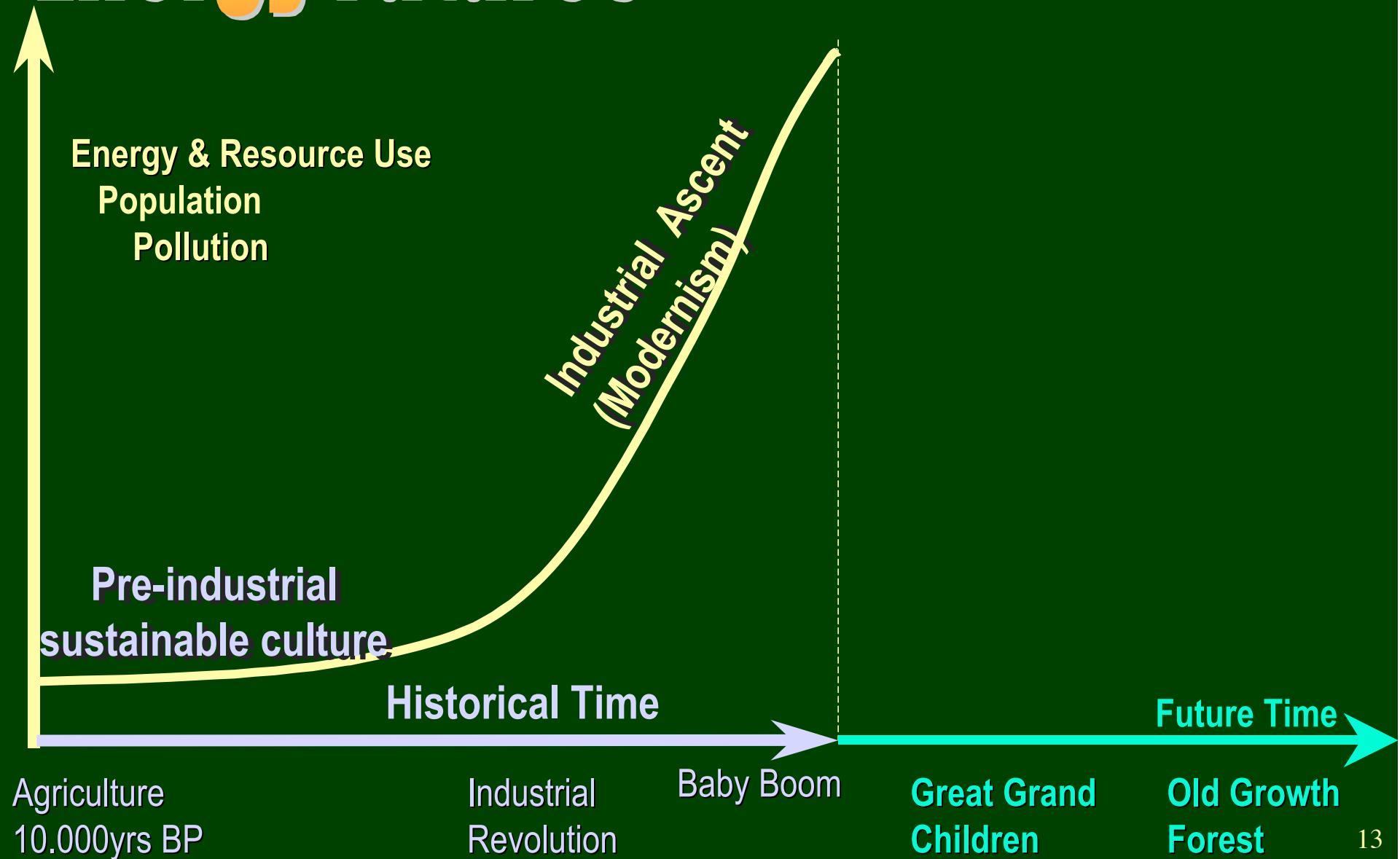


- **Fix symptoms** (e.g. environmental protection)
- **Send problems away** (e.g. third world debt, global warming)
- **Distract with comfort and consumption**

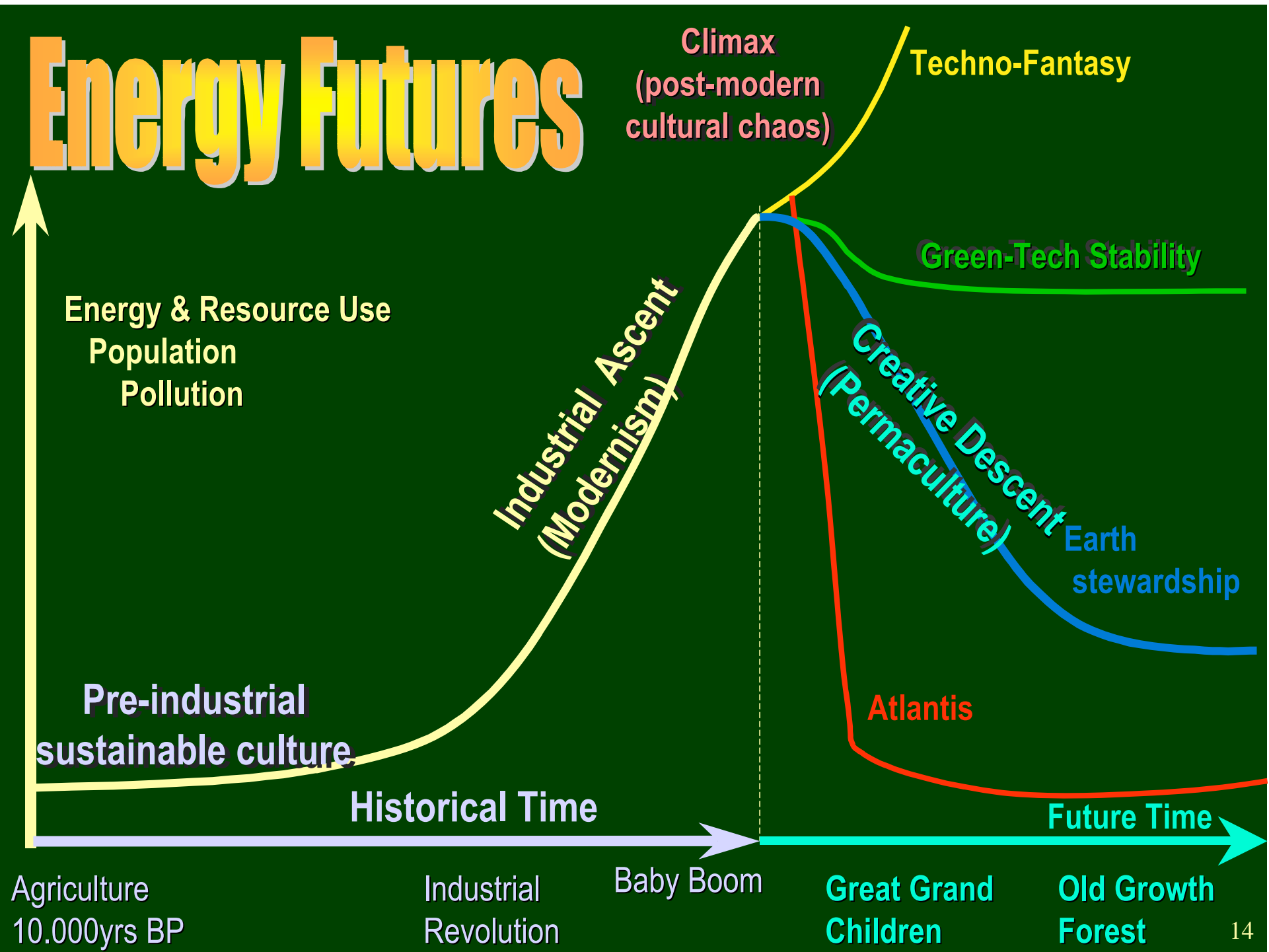


# Energy Futures

Climax  
(post-modern  
cultural chaos)



# Energy Futures

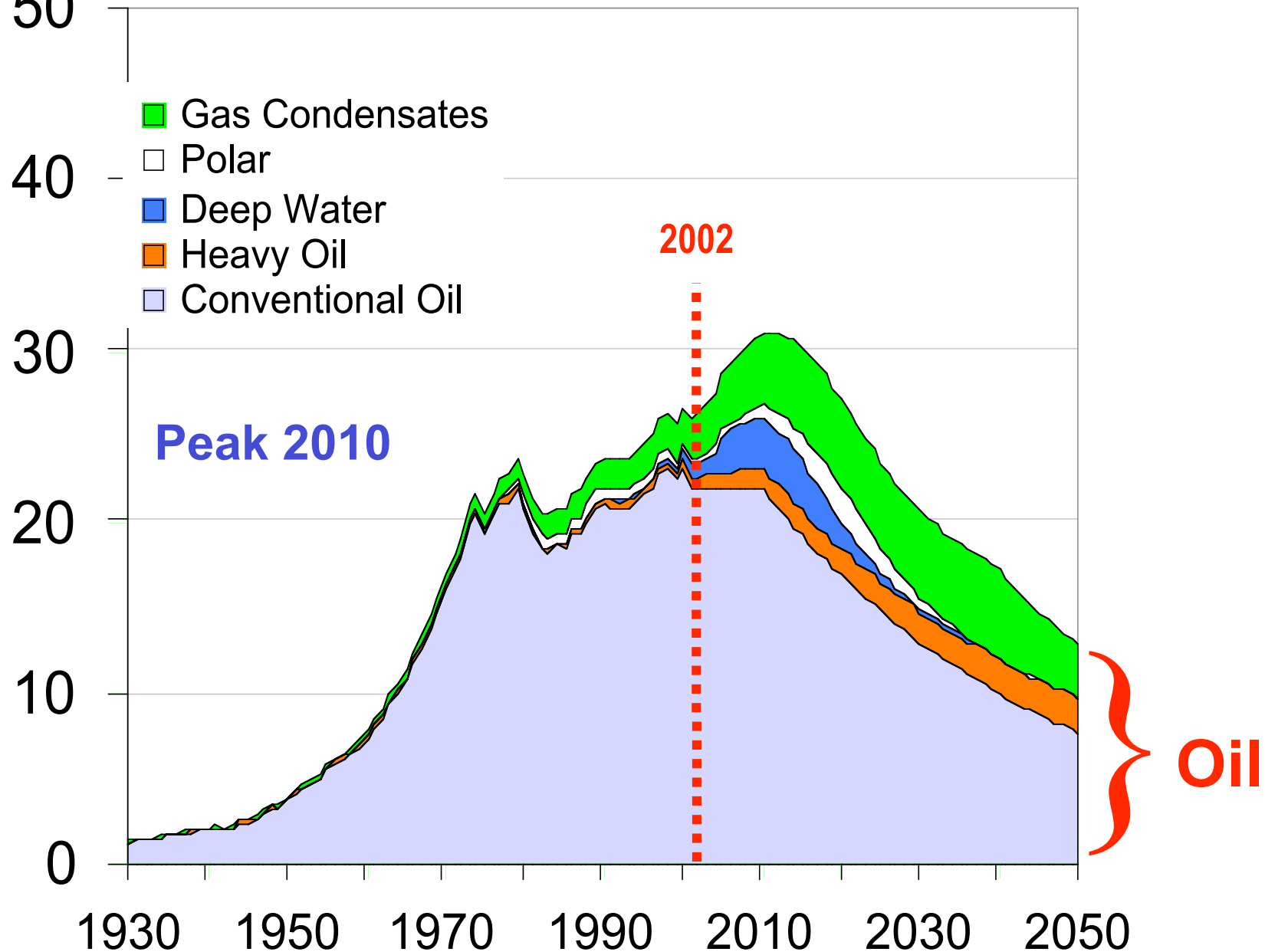




Gboe/pa

## All Oil

[www.PeakOil.net](http://www.PeakOil.net)



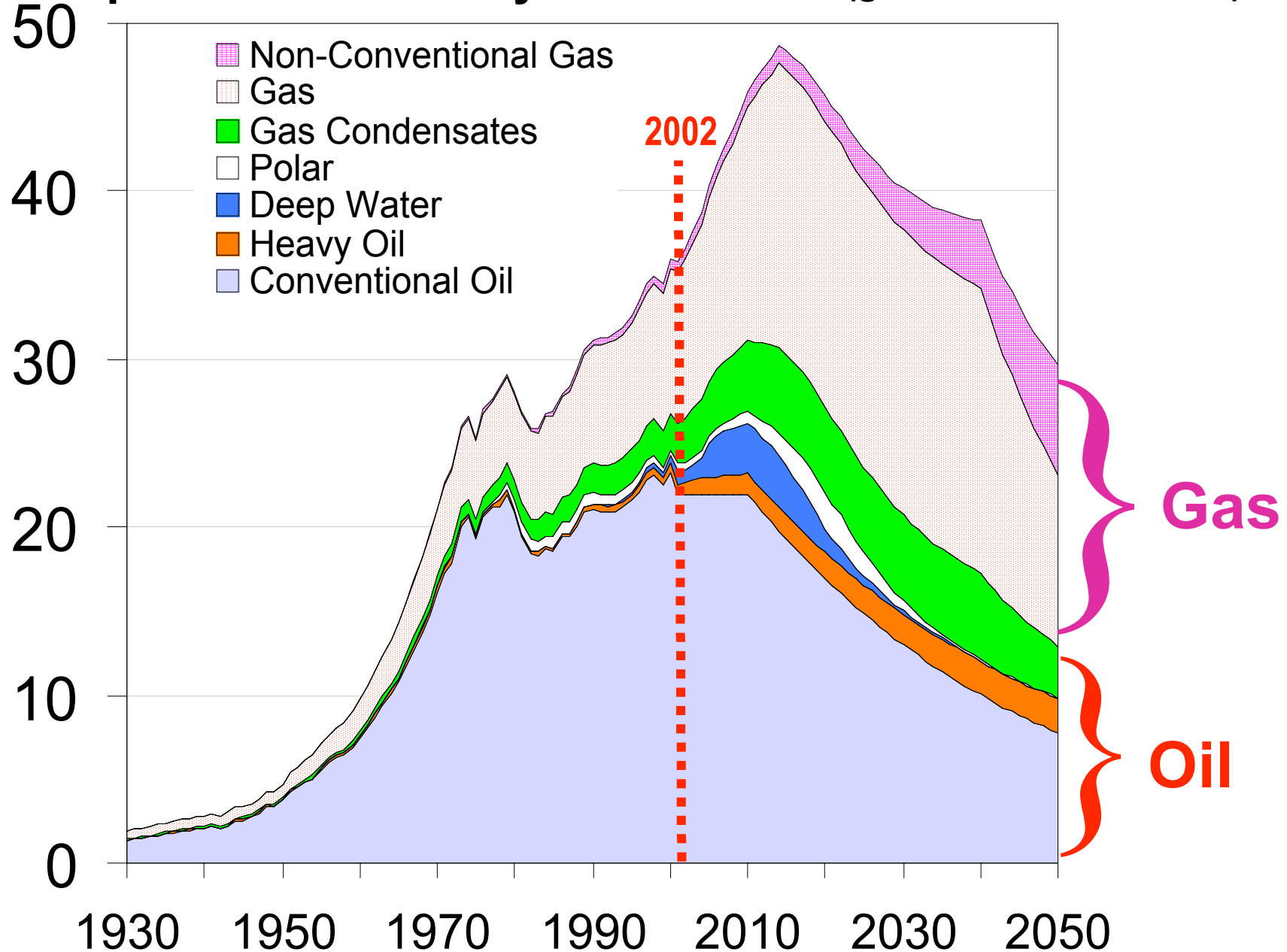
From ASPO "Statistical Review of World Oil and Gas, June 2002"

# What Is Peak Oil ?

- Point of maximum production of a field, region or the world
- Peak usually occurs when about half the total resource is used
- Globalisation has moderated the effect on prices of regional peaks
- Heavy, deep ocean and arctic oil can only mask the current peak in conventional oil for a few years (at a higher cost)
- Gas reserves are the only high quality energy which can substitute for oil with high net energy returns
- Gas production is set to peak in about a decade

Gboe/pa

# All Hydrocarbons (gas at 10,000 cft=1bbl)



From ASPO "Statistical Review of World Oil and Gas, June 2002"



# ***What Is Energy Descent?***

- **Decline in net energy supporting humanity** (Declines in average global well-being probably reflects peaking of energy per person in the 1980's)
- **A gentle decline like a balloon coming back to earth as the most hopeful future.**
- **Mirrors energy ascent, very fast over several decades, and then more slowly over several centuries**
- **Rate of change appears greater due to radical change in direction.**

# Threats to the gentle descent

**Government reduction in fuel tax and food production subsidies to agribusiness**

**Severe economic depression and fascist politics blaming minorities, and those providing for themselves**

**Nuclear war or severe climate change**

# ***Opportunities for permaculture***

- **Rises in oil prices will flow through to all commodities (metals, timber, food, etc)**
- **Higher commodity prices will;**
  - **make local products will be more competitive than imported ones**
  - **stimulate self-reliance, repair, retrofit and recycling**
  - **Low input and organic farming will compete against intensive land uses**
- **Demand for permaculture as life skills education**
- **Resurgence of community life, ethics and values**



# ***Permaculture Solutions for Energy Descent***





# ***Gardening for Food security, Conservation & Health***





# ***Organic soil Fertility building & maintenance***

**Hot Composting**



**Sheet Mulching**



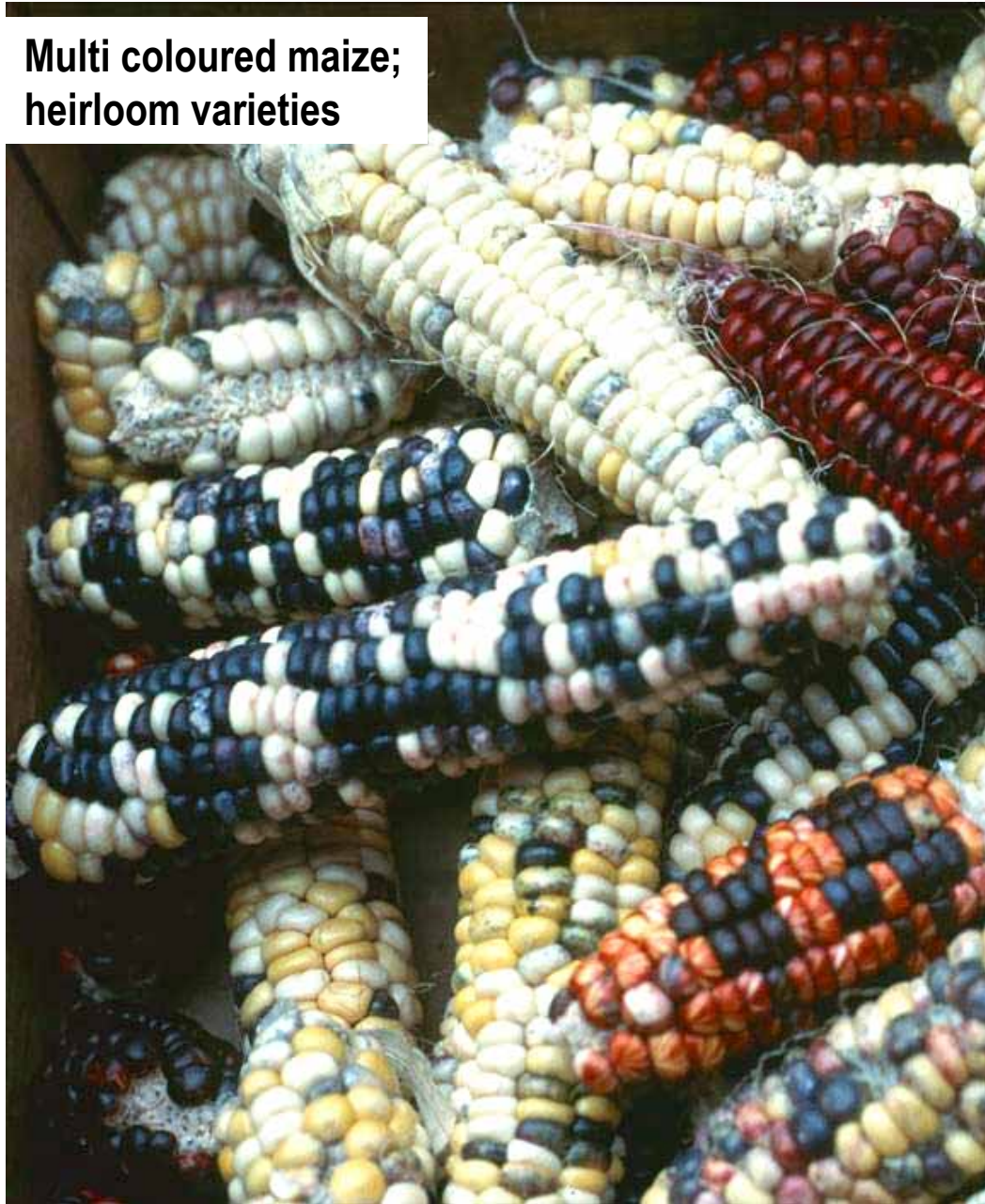
**Worm farms**





# ***Crop biodiversity & seed saving***

Multi coloured maize;  
heirloom varieties



Scarlet Runner bean;  
perennial vegetables



# ***Food Culture & Preserving***



**Bottled fruit, sauces & jams**



**Pasta making**



# ***Working with animals: yields & ecological services***

**Chook tractor  
(Organic market garden  
Kangaroo Valley 2003)**



**Pigs & Bamboo  
(with electric fencing Belli Park, Qld)**



**Milking Goats  
(Melliodora 1997)**





# ***Tree crops: a perennial agriculture***

**Minimal irrigated organic Pistachio  
Food Forest, South Australia**



# ***New ways to establish trees and forests***



**Grow tubes protecting Carobs and other  
high value tree crops in mounded beds Anglesea Victoria**



**Direct seeded one year old  
shelterbelt forest  
Hamilton Victoria**



# ***Use of wild abundance***



**Wild Douglas Fir N.Z.  
Excellent sustainable timber**



**Roadside apples  
& blackberries**



**Kangaroos central Victoria  
Healthy & sustainable meat**

# ***Firewood; sustainable & ethical energy***

Sourdough bakery CERES, Melbourne



Kitchen stove wood  
& backup gas,  
Melliodora





# ***Earth & Stone: abundant, enduring materials***



Dry stone culvert headwall  
Fryers Forest Eco-village  
central Victoria 1997



# ***Earth moving; creative use of fossil fuel***



**Dam & housesite earthworks, Melliodora 1986**





# ***Earthworks for sustainable land & water use***



**Melliodora 2003**  
**1 hectare,**  
**central Victoria**



# ***Passive solar design & natural materials***

**New construction Melliodora:  
mud brick thermal mass floors & load  
bearing walls,  
salvaged timber flooring & joinery**

**Eco retrofit CERES Melbourne  
attached greenhouse**





# ***Water harvesting & natural treatment***



**Ferrocement rainwater tank  
fed from house roof, Fryers Forest**



**Gravel reedbed treating grey water  
Fryers Forest**

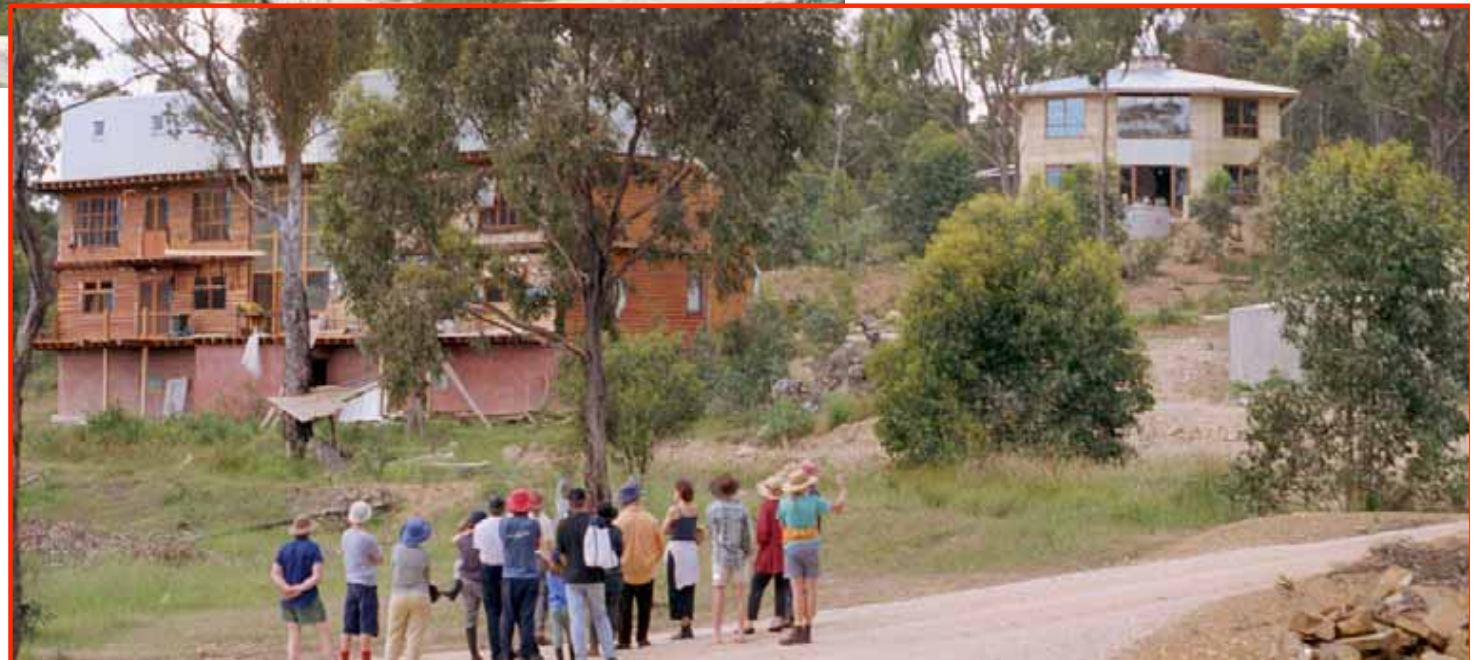
Earthsong Co-housing Community, Auckland N.Z.



## ***New ways of sharing land***

- ***Ecological building***
- ***Common infrastructure***
- ***Community governance***

Fryers Forest  
Eco-village  
Central Victoria  
2003





# ***Reclaim the streets:***

**multi purpose community space**



## ***Creative Recycling***

**Recumbent bicycle made from rubbish**

**(design & construction by Oliver,16)**



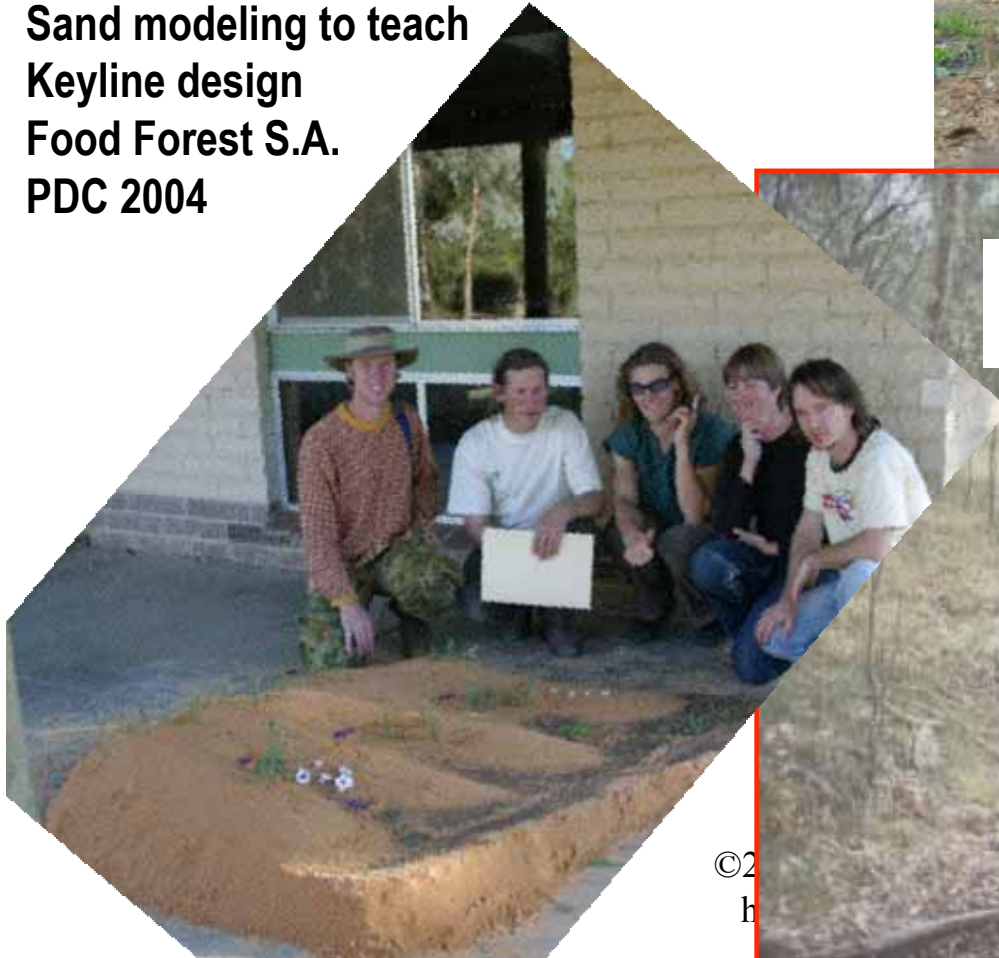


# ***Old & new ways of Learning & Culture***

Indigenous cultural revival;  
2004 Ecoshow Maori welcome ceremony  
Otago, New Zealand



Sand modeling to teach  
Keyline design  
Food Forest S.A.  
PDC 2004



Observation & Interaction with Nature  
(flora survey with baby, Fryers Forest 1995)





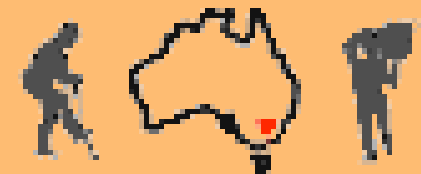
# New ways of Trading

Community Supported Agriculture  
Hepburn Springs



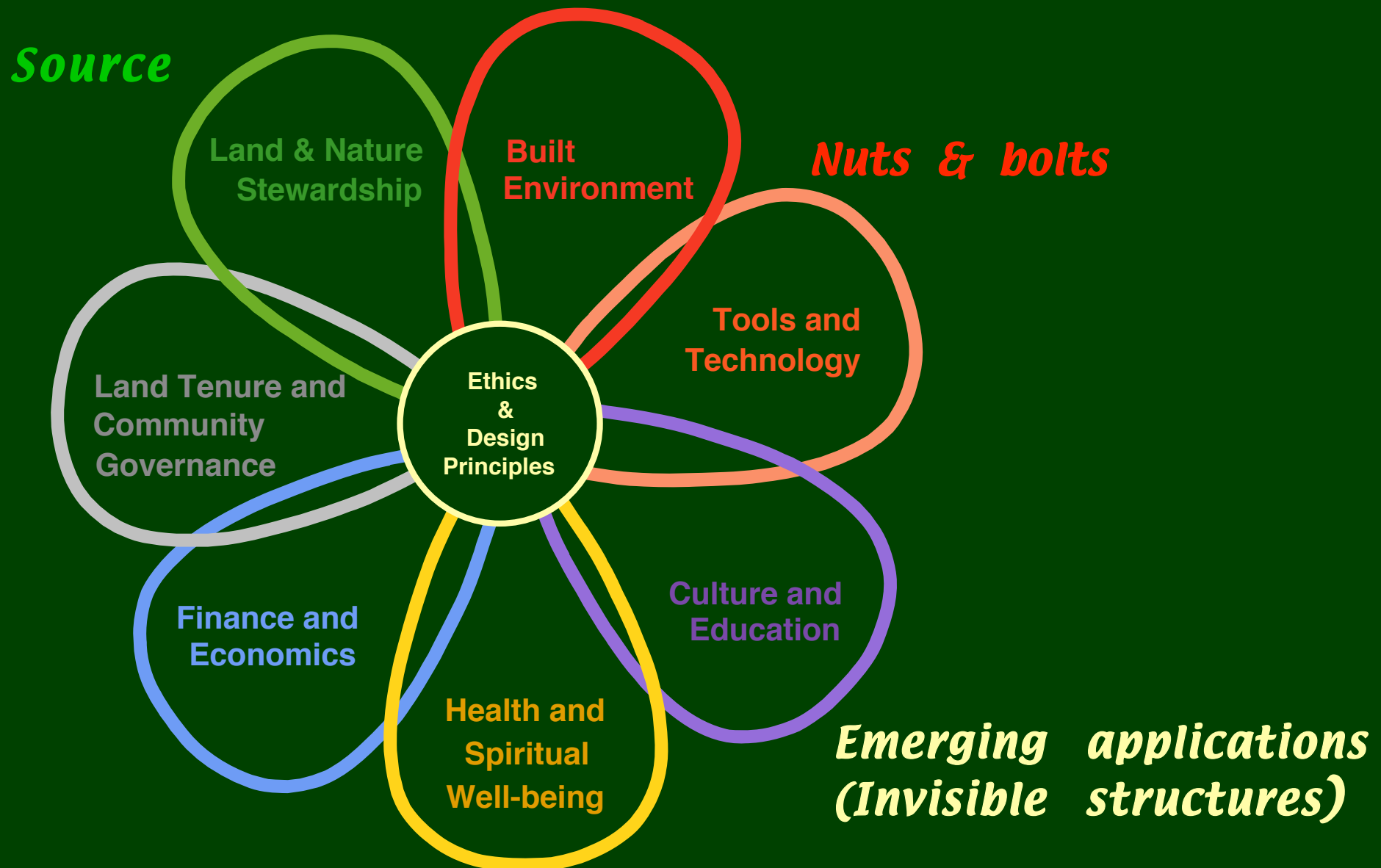
LETS  
local currency  
Northern NSW

WWOOF  
Australia



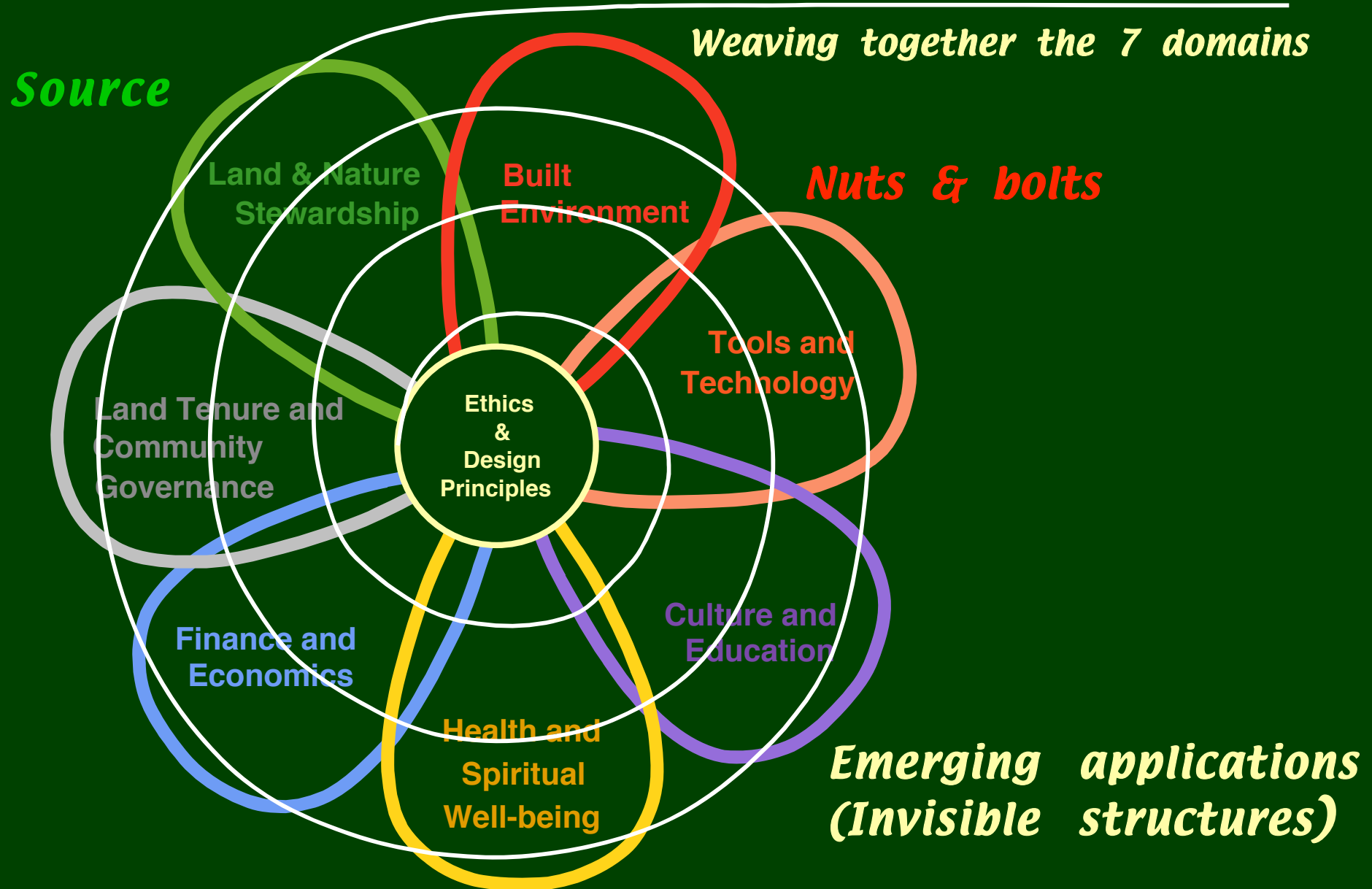
Willing Workers On  
Organic Farms Australia

# *Seven Domains of Permaculture Action*





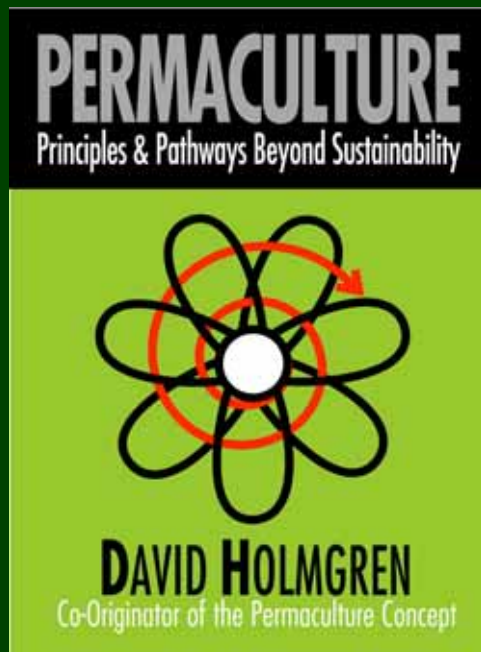
# Seven Domains of Permaculture Action



# *Permaculture*

- A design system for sustainable living and land use
- A grass roots and international movement of practitioners, designers and organisations
- A process for reclaiming our place in nature

# *Permaculture: Reclaiming Our Place In Nature*





# ***References for understanding Energy Peak and Descent***

- Documentary Film *The End of Suburbia: Oil Depletion and the Collapse of the American Dream* [www.endofsuburbia.com](http://www.endofsuburbia.com)
- *The Party's Over: Oil, War and the Fate of Industrial Societies*  
by Richard Heinberg New Society Publishers 2003
- *Association for the Study of Peak Oil & Gas* [www.peakoil.net](http://www.peakoil.net)
- *Oil: Living with Less* by Bruce Robertson [www.STCwa.org.au](http://www.STCwa.org.au)
- *Permaculture: Principles & Pathways Beyond Sustainability*  
by David Holmgren Holmgren Design Services 2002
- Video Interview *David Holmgren speaks with Adam Fenderson*  
[www.globalpublicmedia.com/interviews/106](http://www.globalpublicmedia.com/interviews/106)